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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,659	03/20/2002	Tatsuo Akimoto	1069-02	2778

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IP DEPARTMENT OF PIPER RUDNICK LLP  
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EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	Application No. 10/088,659	Applicant(s) AKIMOTO ET AL.	
	Examiner Krishnan S Menon	Art Unit 1723	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on RCE of 2/24/04.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1-22 are pending.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 6 and 17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 09-187628.

JP 628 teaches a hollow fiber module comprising a cylindrical case (4-fig 1), a first sealing body (7), a second sealing body (6), a first cap outside the first sealing body (3), a second cap outside the second sealing body (2), filtration chamber inside the case, first chamber inside the first cap, second chamber inside the second cap, hollow fiber bundle with ends open in the first chamber and ends sealed to the second chamber by the second sealing body (at 21,31), a raw water supply port on lateral face of cylindrical casing (91), air discharge port (92) on lateral face of casing, holes through the second sealing body (61), filtrate delivery port on the first cap (31), drain port on the second cap (21) as in claim 1. The covers can be opened and closed as in claim 6 (see fig – 2 and 3 - threaded). Filtration chamber is pressurization type as in claim 17 (see specification).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-5 and 7- 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-187628 in view of JP 11-319507.

JP 628 teaches all the limitations of claim 1. Instant claims add further limitations not taught by JP 628, which are taught by JP-507 as follows: Cross-sectional area of the casing can be 150 cm<sup>2</sup> or more with packing ratio 40 to 70% as in claim 2 (see spec). Hollow fibers are kept apart from the casing wall by a spacer (4) which extend from the sealing body as in claim 3, and the protruding height is about 10 mm from the casing wall as in claim 4 (see spec), with faces of the spacers inclined towards the center of the cylindrical case as in claim 5. The case is made of thermoplastic, particularly PVC as in claims 8 and 9 (see spec). It would be obvious to one of ordinary skill in the art at the time of invention to use the teachings of JP-507 in the teaching of JP-628 because JP-507 gives the material, cross-sectional and packing ratio details which are required in the module and not provided by JP-628; JP-507 also provides the protective spacer as in claims 3-5 for protecting the base of the hollow fibers as taught by JP-507.

Claim 7 adds further limitation of a check valve in the airline supplying to air to the module, which JP-628 in view of JP-507 does not teach. However, it would be obvious to one of ordinary skill in the art at the time of invention that check valves are commonly used in air supply lines to prevent backflow when the air-pressure goes down.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP628 in view of JP 507 as in claim 9 above and further in view of Bae (US 6,362,264 B1).

Claim 10 adds further limitation of PVC having non-lead thermal stabilizer, which JP does not teach. Non-lead thermal stabilizers for PVC are taught by Bae 264 (abstract). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Bae in the teaching of JP-628 in view of JP-507 for the thermal stabilizer in PVC for drinking water or food application as taught by Bae (col 2 lines 46-60).

4. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-628 as in claim 1 above, or JP-628 in view of JP 507 as in claim 2 above, and further in view of Oshida et al (US 5,552,047) and Nomura et al (US 6,457,917 B1).

Claim 11 and 12 (both depending from claims 1 and 2) add limitations acrylonitrile – X-styrene co-polymer (claim 11) where X is a rubber such as ethylene-propylene (AES) or acrylic (AAS) (claim 12). Oshida teaches hollow fiber module housing having acrylonitrile – styrene copolymers (col 4 lines 3-8, lines 43-51) and

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Nomura teaches AES and AAS molding formulations (col 4 lines 13-25). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Oshida (047) and Nomura (917) in the teaching of JP- 628 or JP-628 in view of JP-507 for the casing for dialysis type application as taught by Oshida (col 4 lines 3-8) because AAS and AES would provide lightweight, high strength and stiffness for the housing (abstract – Nomura).

5. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 628 in view of Macheras et al (US 6,290,756 B1).

JP 628 teaches all the limitations of claim 1. Claims 13-16 add the further limitation of an epoxy resin for the sealing body, type of epoxy used and the degree of penetration of the epoxy in the hollow fiber. JP-628 does not teach that the sealing body is epoxy. Macheras teaches Bisphenol A and F type epoxies for the sealing body in a hollow fiber module (col 5 lines 29-39). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Macheras in the teaching of JP 628 for an appropriate epoxy resin material for the sealing body because Macheras teaches that type of epoxy used would provide physical and mechanical properties that can be tailored for improving the performance of the module (see abstract and col 1 1<sup>st</sup> paragraph) . Re claim 16, JP 628 in view of Macheras is silent on the degree of penetration of the epoxy into the hollow fibers. However, it would be obvious to one of ordinary skill in the art at the time of invention that the epoxy must penetrate sufficiently

to provide the required seal with the sealing body to obtain sufficient sealing between the sealing body and the hollow fibers.

6. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-628 in view of Selbie et al (US 5,405,528).

JP 628 teaches all the limitations of claim 1. Claim 18-22 add further limitations, not taught by JP-628, but taught by Selbie, as follows: Identical modules are connected with each-other with discharge ports connected to a common pipe as claim 18, modules are mounted in plural rows in a frame in claim 19 which are symmetrically positioned in claim 20, supply water and filtrate ports are connected to common supply and filtrate pipes in claim 21 and the connections are by loose joints in claim 22. See Selbie (528), figures 5 and 6, and abstract. (The examiner is unclear what the 'loose joint' in claim 22 means, and considers this as 'joint that can be disconnected' for examination purpose). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Selbie in the teaching of JP-628 to string the modules in series/parallel for high capacity production.

### ***Response to Arguments***

Applicant's arguments filed 1/20/04 have been fully considered but they are not persuasive.

In response to applicant's arguments that the ref JP-628 fails to disclose elements j,k,l and n, and that Patent Office must demonstrate that these elements are

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inherent in the JP-628 disclosure: Patent office does not see any need to demonstrate inherency in this matter because a structural element corresponding to each of these elements is pointed out in the rejection. Applicant is claiming an apparatus. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Therefore, applicant's recital of the case laws Continental Can Co. v. Monsanto, In re Spade, In re Robertson, Ex parte Levy, etc., are not relevant.

Applicant's arguments are generally based on the references not having exact functional description for the elements as in the applicant's invention. For apparatus claims, it is the structure that matters, not the function of how the apparatus, or the element of the apparatus, is used. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App.



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& Inter. 1987). In the case of claim 1, there is nothing in the reference JP-628 that prevents port 91 from being used as a feed port for the raw water, port 92 as the air outlet, or port 21 as the drain.

Rest of the arguments are moot due to the new grounds for rejection.

### ***Conclusion***


This action is in response to an RCE and is made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Krishnan Menon  
Patent Examiner

  
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